

REMARKS

Applicant requests favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

Claims 13, 15-21 and 24-27 are presented for consideration. Claims 13 and 21 are independent. Claims 13, 15-21 and 24-26 have been amended to clarify features of the subject invention. Support for these changes can be found in the original application, as filed. Accordingly, no new matter has been added.

Applicant requests favorable reconsideration and withdrawal of the rejection set forth in the above-noted Office Action.

Claims 13, 15-21 and 24-27 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Japanese patent document number 7-267192 A to Yagishita in view of U.S. Patent No. 6,954,258 to Emoto. Applicant submits that the cited art, whether taken individually or in combination, does not teach or suggest many features of the present invention as previously recited in these claims. Therefore, this rejection is respectfully traversed. Nevertheless, Applicant submits that independent claims 13 and 21, for example, as presented, amplify the distinctions between the present invention and the cited art.

In one aspect of the present invention, independent claim 13 recites a supporting apparatus for supporting a member, which mounts a movable stage, above a base. The apparatus includes a permanent magnet arranged on one of the member and the base, a pair of permanent magnets arranged on the other of the member and the base, and arranged so that the permanent magnet is interposed therebetween, and a linear motor, which is arranged between the member and the base, and provides a force which acts on the member. The magnetized directions of the permanent magnet

and the pair of permanent magnets are perpendicular to a gravity direction, which is a direction of gravity acting on the member. A width of the pair of permanent magnets is different from a width of the permanent magnet in a direction perpendicular to the magnetized directions and the gravity direction. The permanent magnet and the pair of permanent magnets are configured to generate a force in the gravity direction and to support the member above the base in the gravity direction through the force.

In another aspect of the present invention, independent claim 21 recites a supporting apparatus for supporting a member which mounts a movable stage, above a base. The apparatus includes a permanent magnet arranged on the member, and magnetized in a first direction perpendicular to a gravity direction, which is a direction of gravity acting on the member, a pair of permanent magnets arranged on the base, and arranged so that the permanent magnet is interposed therebetween, and a driving device for driving said pair of permanent magnets, in order to change a facing area of the permanent magnet and the pair of permanent magnets in a second direction perpendicular to the first direction and the gravity direction. The permanent magnet and the pair of permanent magnets are configured to generate a force in the gravity direction and to support the member above the base in the gravity direction through the force.

Accordingly, the present invention, as recited in independent 13 and 21, provides various aspects of supporting apparatus for supporting a member, which mounts a movable stage, above a base. A permanent magnet and a pair of permanent magnets are configured to generate a force in the gravity direction and to support the member above the base in a gravity direction through the force. Such features of the present invention are discussed in more detail in the subject specification on page 12, line 15, to page 13, line 23. By such an arrangement, the present invention makes it possible to generate a large supporting force in the gravity direction, and to set a spring constant to

be substantially zero. (See FIG. 4B, for example, of the subject application.) Thus, the present invention is able to achieve, simultaneously, supporting a large load and setting the spring constant to be low in the supporting direction.

Applicant submits that the cited art, whether taken individually or in combination, does not teach or suggest such features of the present invention, as recited in independent claims 13 and 21.

The Examiner relies on the Yagishita document for showing, in FIGS. 1-3, a supporting apparatus for supporting a member which mounts a movable stage to a base, in which the supporting apparatus is mounted on a vertical plane of the cabin, the apparatus including a first magnet 3 arranged on one of the member and the base, and a second magnet 4, 4' arranged on the other of the member and the base, on which the first magnet is arranged, and arranged so that the first magnet is interposed. The Examiner asserts that the magnetized direction of the first magnet and the second magnet unit are perpendicular to a gravity direction of the member, with a width size of the second magnet unit in a direction perpendicular to the magnetized directions and the gravity direction being different from or larger than a width of the first magnet.

Applicant submits, however, that the supporting apparatus 7, shown in the Yagishita document, is mounted on the plane perpendicular to the base of the cabin and generates a force in a magnetized direction, but does not generate a force in a gravity direction perpendicular to the magnetized direction in the manner of the present invention recited in independent claims 13 and 21.

Applicant submits that the supporting apparatus 7 shown in the Yagishita document merely corresponds to the conventional, prior art arrangement, such as that shown in FIG. 18B of the subject application. Applicant submits that with the conventional arrangement, in a case in which homopolar magnets are set to face each other to generate a repulsive force in a magnetized direction, as shown in FIG. 18B, to support the large load and to set the spring constant to be small in the

supporting direction (that is, the Z-direction) cannot be achieved simultaneously. Also, an anti-vibration performance of an absorbing a force (for example, a large load) in the supporting direction, as a displacement, is limited to a certain degree. Applicant submits, therefore, that with the force, a large load, is likely to be undesirably transmitted to a work table 1710 as an applied vibration source. Accordingly, Applicant submits that the arrangement in the Yagishita document is remote from the present invention, as recited in independent claims 13 and 21.

Applicant further submits that the remaining art cited does not cure the deficiencies noted above with respect to the Yagishita document.

The Examiner relies on the Emoto patent for teaching an arrangement in which a magnet, which may be a permanent magnet or an electromagnet, and driving means employing a Lorentz force, a linear motor, or the like. Applicant submits, however, that the Emoto patent merely discusses a configuration for using a permanent magnet or an electromagnet as empty-weight supporting means, and a configuration for using a Lorentz force or a linear motor as driving means. Applicant submits, therefore, that the Emoto patent adds nothing to the teachings of the Yagishita document that would render obvious Applicant's present invention, as recited in independent claims 13 and 21.

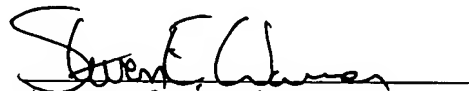
For the foregoing reasons, Applicant submits that the present invention, as recited in independent claims 13 and 21, is patentably defined over the cited art, whether that art is taken individually or in combination.

Dependent claims 15-20 and 24-27 also should be deemed allowable, in their own right, for defining other patentable features of the present invention in addition to those recited in their respective independent claims. Further individual consideration of these dependent claims is requested.

Applicant submits that the instant application is in condition for allowance. Applicant requests favorable reconsideration, withdrawal of the rejection set forth in the above-noted Office Action and an early Notice of Allowance.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our address listed below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Steven E. Warner", written over a horizontal line.

Attorney for Applicant
Steven E. Warner
Registration No. 33,326

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3800
Facsimile: (212) 218-2200

DC Word -280312_1